

ABSTRACT

In recovering data originally written on a carrier of magnetic media after a catastrophic failure, data may be read without prior knowledge of the write channel by which the data was originally written and in the presence of intersymbol interference of the readback signal. This is accomplished by forming an image of the spatial response function of the magnetoresistive transducer used to recover the data and by forming an image of the raw data read from the carrier of magnetic media by the magnetoresistive transducer for which the response function has been characterized. An image of the distribution of virtual magnetic charge on the carrier of magnetic media is obtained through deconvolution of the image of the response function of the magnetoresistive transducer and the raw readback signal. The readback signal corresponding to the data originally written on the carrier of magnetic media is then recovered by spatial differentiation of the image of virtual magnetic charge. Further improvement in image quality of the resulting image is accomplished through a noise reduction technique such as by the application of an arctangent function to the data prior to differentiation.